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EXAMINER

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED REJECTION

Response to Applicant's Remarks

1. The applicant has added new claims 6-14. The newly added limitations are addressed in the rejection below.
2. Applicant's arguments filed 6/16/2010 have been fully considered but they are not persuasive. The reasons are given below under *Response to Applicant's Arguments*.

Claims

3. Applicant is advised that should claim 5 be found allowable, claim 11 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).
4. More specifically, claim 5 claims the nonionic surfactant (b) is "at least one type selected from the group consisting of polyoxyalkylene sorbitan fatty acid ester having an HLB value of 9 to 11, polyoxyalkylene glycerin fatty acid ester having an HLB value of 9 to 10, and phosphate trimester having an HLB value of 7 to 13".
5. Claim 11 claims the nonionic surfactant is "at least one selected from a group consisting of polyoxyalkylene sorbitan fatty acid esters having an HLB value of 9 to 11,

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polyoxyalkylene glycerin fatty acid esters having an HLB value of 9 to 10, and phosphate trimester having an HLB value of 7 to 13".

Appropriate correction is required.

35 U.S.C. 103 Rejection

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1, 2, and 4-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura et al. (JP 2003 - 201306, translation provided by US Pat. No. 7,317,056), in view of Nawata et al. (PGPUB 2003/0153887), and further in view of Ichiki et al. (US Pat. No. 3,691,108).

10. Yoshimura et al. teaches a method for forming polymer particles having a core/shell structure to produce adhesives easily swollen with water [abstract]. The core is composed of a main monomer and a functional monomer, wherein the functional monomer is preferably an unsaturated carboxylic acid such as (meth)acrylic acid [column 7, line 59] at 1 to 50% by weight of the core/shell particle [column 8, line 34]. The shell polymer is composed of unsaturated carboxylic acid and hydrophilic comonomer, wherein both are each 1-50% of the entire core/shell particle [column 5, lines 2 and 27]. When the core/shell particle contains 1% of unsaturated carboxylic acid, 1% functional monomer, and 50% methacrylic acid, the amount of water-soluble polymer would be 4 parts by weight with respect to 100 parts by weight of methacrylic acid, wherein 4 parts by weight is within the claimed range of 3 to 10 parts by weight (claim 13).

11. More specifically, Yoshimura et al. teaches in Pressure-sensitive Adhesive Composition A1 [column 16, bottom] first forming a water-soluble [column 4, lines 46-47] shell from a mixture of deionized water (aqueous), acrylic acid (claim 2), 2-

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hydroxyethylacrylate, and ammonium persulfate initiator. Both acrylic acid and 2-hydroxyethylacrylate contain unsaturated double bonds (claim 13). A monomer mixture of butyl acrylate, 2-ethyl-hexyl acrylate, 2.0 parts by weight methacrylic acid, ammonium persulfate initiator, and triethanolamine as a pH adjuster is then added to the shell mixture to form a core particle [column 16, bottom; column 17, top].

12. In Pressure Sensitive Adhesive Composition A3 [column 17, lines 30-42], the core mixture is an emulsion mixture in which water and 0.1 parts by weight anionic emulsifier A are added. The anionic emulsifier is sodium polyoxyethylene nonyl phenyl ether sulfonate, wherein R' of the instant formula $R'-SO_3M$ is polyoxyethylene nonyl phenyl ether and M is sodium, an alkaline metal. The amount of emulsifier used is equivalent to 5 parts by weight with respect to 100 parts by weight of acrylic acid in the core, wherein 5 parts by weight is within the claimed range of 1 to 10 parts by weight (claims 1 and 8).

13. Regarding claims 1 and 6, Yoshimura et al. teaches forming the shell polymer, adding the core monomer mixture to the shell polymer, and then polymerizing the core monomer mixture. Yoshimura et al. is silent with respect to polymerizing the core polymer first and then polymerizing it with the shell polymer. However, the Examiner fails to find the significance of forming the core first and then polymerizing it with the shell polymer over forming the water-soluble polymer (f) and then polymerizing the core in the presence of the shell polymer. Both methods would result in a core particle encapsulated by the shell polymer. Furthermore, the applicant does not show that the

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claimed method would produce unexpected results over the method taught by Yoshimura. Since both methods would result in a core particle encapsulated by a shell, it would have been obvious to one of ordinary skill in the art to use either method to form the core-shell particles.

14. Yoshimura is further silent with respect to the number average molecular weight of the shell polymer being from 500 to 10,000. However, since Yoshimura et al. uses a small amount of ammonium persulfate, an initiator disclosed in the instant application [Page 27, line 2], and polymerizes at a moderate enough temperature to produce a resin with good water swellability [last row of Table 3 and line 58], the examiner believes that the shell polymer of Yoshimura et al. would have a number average molecular weight within the claimed range. Since the PTO does not perform experiments, the burden is shifted to the applicant to show that the shell polymer of Yoshimura does not have a molecular weight within the claimed range. In re Best, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977).

15. Yoshimura et al. is further silent with respect to the water-soluble shell having an acid value within the range of 130 to 800 (claim 13). However, the pH of the water-soluble shell of Reference Example 1 of the instant invention is 5.07 [Page 35, line 13]. Yoshimura et al. teaches that the pH of the water-soluble shell is preferably less than 7 [column 6, lines 27-30], wherein less than 7.0 encompasses a pH of 5.07. Since the pH range of Yoshimura et al. encompasses a pH of 5.07, there is reasonable basis to

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believe that the water-soluble shell of Yoshimura would have an acid value within the claimed acid value range. Since the PTO cannot perform experiments, the burden is shifted to the applicant to show that the water-soluble shell of Yoshimura et al. would not have the claimed acid value range. In re Best, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977).

16. Yoshimura et al. teaches that nonionic surfactants such as polyoxyethylene alkyl ethers (claim 10) can be further added as “conventional other components” to the core mixture [column 10, lines 10-11]. Yoshimura et al. is silent with respect to suspending the core mixture in a hydrophobic organic solvent containing nonionic surfactant, wherein the nonionic surfactant has an HLM value of 4 to 13 (claim 4) and is selected from the group consisting of polyoxyalkylene sorbitan fatty acid ester having an HLB value of 9 to 11, polyoxyalkylene glycerin fatty acid ester having an HLB value of 9 to 10, and phosphate triester having an HLB value of 7 to 13 (claims 5 and 11).

17. However, in the same field of endeavor of producing a water-absorbent polymer [abstract], Nawata et al. teaches producing the polymer by suspension polymerizing a monomer mixture in a solution of n-heptane solvent (claim 9) and sorbitan monolaurate nonionic surfactant having a HLB value of 8.6 (claim 4), wherein the nonionic surfactant can be a polyoxyethylene sorbitan fatty acid ester having a HLB value of greater than 6 (claim 5) [0058]. Using such a surfactant increases the surface area of the particle [0039], which in turn increases the absorption rate [0030].

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18. Nawata et al. further teaches heating and distilling off the n-heptane and water from the system in order to obtain the water-absorbing particles (claim 14) [0109].

19. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Yoshimura and Nawata for the benefit of producing a water-absorbent resin that better absorbs liquids by increasing the surface area of the polymer particles.

20. Regarding claims 7 and 12, Yoshimura et al. teaches the core may contain crosslinkable monomers having two or more radically polymerizable unsaturated bonds (claim 7) [column 7, lines 61-62], wherein such monomers include ethylene glycol di(meth)acrylate [column 7, last line] and trimethylolpropane tri(meth)acrylate, wherein the former is a (meth)acrylic acid ester and the latter is a tri(meth)acrylic ester (claim 12). Yoshimura et al. is silent with respect to the crosslinkable monomers being crosslinking agents. However, Nawata et al. teaches that di- or tri(meth)acrylic acid esters of (poly)ethylene glycol and trimethylolpropane function as crosslinking agents [0054]. The crosslinkable monomers in the core of Yoshimura et al. would thus serve as crosslinking agents.

21. The combination of Yoshimura and Nawata is silent with respect to the anionic surfactant having the formula $R'SO_3M$, wherein M is an alkenyl group having 8 to 30 carbon atoms or a hydroxyalkyl group having 8 to 24 carbon atoms and M represents an alkaline metal, quaternary ammonium, or quaternary amine. However, Ichiki et al.

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teaches sodium salts of a sulfonate [column 2, lines 32-34] containing a straight chain alpha-olefin of the formula $R'-CH=CH_2$, wherein R' is an alkyl radical of 12 to 20 carbons [column 1, line 25-27], have high detergency and wetting properties [column 7, line 56; column 8, line 1]. Since Yoshimura et al. produces an emulsion and high detergency is directly related to the dispersing ability of a surfactant, it would have been obvious to use sodium alpha-olefin sulfonate in the emulsion of Yoshimura for the benefit of producing a uniform dispersion of core particles. Furthermore, since the sulfonate surfactant has good wetting properties it would provide better adsorption to water, in turn providing better water swellability as desired by Yoshimura.

22. It would have been obvious to one of ordinary skill in that art at the time the invention was made to combine the teachings of Yoshimura and Nawata with Ichiki for the benefit of producing a uniform dispersion while forming the core emulsion and to provide a product with good water absorption.

Response to Applicant's Argument

23. Applicant's arguments filed 6/16/2010 have been fully considered but they are not persuasive for the reasons given below.

24. The applicant argues that the teachings of Yoshimura have been mischaracterized. Specifically, Yoshimura states that "when a synthetic resin emulsion containing polymer particles having a core/shell structure comprising a shell produced by polymerizing an unsaturated carboxylic acid and a hydrophilic comonomer and a

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core produced by conducting polymerization in the presence of the shell is used as a main component of a pressure-sensitive adhesive composition, the pressure-sensitive adhesive composition has excellent fundamental adhesive properties that can be easily swollen with water." [Column 2, lines 43-52].

25. Applicants contend that this is a clear teaching away from the polymerization of the core material before the inclusion of the shell materials. There would have been no motivation, based on Yoshimura, to prepare the core material before the inclusion of the shell materials as claimed.

26. The Examiner respectfully disagrees. The present claim claims first forming a core polymer and then polymerizing the shell polymer with the core. As the applicant points out, Yoshimura et al. teaches forming the shell polymer first and then polymerizing the core in the presence of the shell polymer. However, the Examiner fails to find a significant difference between first forming the core polymer then polymerizing it with the shell polymer as presently claimed and first forming the shell polymer then polymerizing the core in the presence of the shell polymer. Both methods would still result in a core particle encapsulated by the shell polymer. Furthermore, the applicant fails to show unexpected results or improvements of the core/shell particles between the methods. Since either method would result in a core particle encapsulated by a water-insoluble polymer, the Examiner finds the applicant's argument unpersuasive.

27. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELIZABETH ENG whose telephone number is (571)270-7743. The examiner can normally be reached on Mondays through Fridays from 9:30 am to 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8743.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Elizabeth Eng/

/David Wu/

Supervisory Patent Examiner, Art Unit 1796